



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/585,196

07/03/2006

Randell L. Mills

08056.0015-00

6183

22852

7590

10/30/2009

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

TSAI, CAROL S W

ART UNIT

PAPER NUMBER

2857

MAIL DATE

DELIVERY MODE

10/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,196	Applicant(s) MILLS, RANDELL L.	
	Examiner CAROL S. TSAI	Art Unit 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/23/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 52-54 is/are rejected.
- 7) ☒ Claim(s) 18-51 and 55-70 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/19/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,188,033. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter presented in this application is substantively the same as those of copending Application No. 11/596,218. It would have been obvious to omit using a constraint that the bound electron(s) does not radiate under acceleration if its function were not desired. See MPEP 2144.04; *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989).

3. Claim 52 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,188,033. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter presented in this application is substantively the same as those of copending Application No. 11/596,218. It would have been obvious to omit using a constraint that the bound electron(s) does not radiate under acceleration if its function were not desired. See MPEP 2144.04; Ex parte Wu, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989).

4. Claim 53 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 113 of copending Application No. 11/596,218. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter presented in this application is substantively the same as those of copending Application No. 11/596,218. It would have been obvious to omit using a constraint that the bound electron(s) does not radiate under acceleration if its function were not desired. See MPEP 2144.04; Ex parte Wu, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989).

5. .This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Information Disclosure Statement

6. The references listed in the Information Disclosure Statement filed on -- have been considered by the examiner (see attached PTO-1449 or PTO/SB/08A and 08B forms).

7. The IDS submitted contain over 150 references. The examiner has considered the references to the extent reasonably expected during normal examination time. If applicant considers there is a particular reference or teaching particularly relevant to the claimed invention it is requested from the applicant to provide a statement indicating such relevance and a clear identification of such reference.

8. All NPL documents including 572 publications listed 37 pages of the IDS have been crossed out by the Examiner because many NPL documents did not provide the publication date. The Examiner is not able to cross out those publications one by one through 37 pages within limited normal examination time. **"Each publication must be identified by publisher, author (if any), title, relevant pages of the publication, and date and place of publication. The date of publication supplied must include at least the month and year of publication, except that the year of publication (without the month) will be accepted if the applicant points out in the information disclosure statement that the year of publication is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the particular month of publication is not in issue"** as described at MPEP 609.04 (a), section I, all publications listed in the IDS must be identified by publisher, author (if any), title,

Art Unit: 2857

relevant pages of the publication, and date and place of publication. Appropriate correction for undated publications is required in the reply to this Office Action.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claims 16 and 17 contain the trademark/trade names, such as Boxed®, Axes®, Lighting®, PlotPoints®, and ViewPoint®. Where trademark or trade names are used in claims as a limitation to identify or describe a particular material or product, the claims does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2857

13. Claims 1-15 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,690,705 to Maksimov et al. in view of Applicant Admitted Prior Art (hereafter referred as AAPR) and JP 2002008892 to Shimazu.

14. With respect to claims 1, 2, and 52, Shimazu discloses a system of computing and rendering the nature of bound atomic and atomic ionic electrons from physical solutions of the charge, mass, and current density functions of atoms and atomic ions, which solutions are derived from Maxwell's equations, comprising: processing means for processing and solving the equations for charge, mass, and current density functions of electron(s) in a selected atom or ion, wherein the equations are derived from Maxwell's equations using a constraint that the bound electron(s) does not radiate under acceleration (see Abstract, lines 1-18; col. 3, line 45 to col. 22, line 56).

15. Maksimov et al. do not disclose using a constraint that the bound electron(s) does not radiate under acceleration.

16. AAPR teaches using a constraint that the bound electron(s) does not radiate under acceleration (see page 3, lines 24-25 **The mathematical formulation for zero radiation based on Maxwell's equations**).

17. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Maksimov et al.'s method to include using a constraint that the bound electron(s) does not radiate under acceleration, as taught by AAPR, in order that zero radiation based on Maxwell's equations can be calculated for rendering the nature of atoms and atomic ions.

18. Maksimov et al. do not disclose a display in communication with the processing means for displaying the current and charge density representation of the electron(s) of the selected atom or ion.

19. Shimazu teaches a display in communication with the processing means for displaying the current and charge density representation of the electron(s) of the selected atom or ion (see Figs. 6-8).

20. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Maksimov et al.'s system to include a display in communication with the processing means for displaying the current and charge density representation of the electron(s) of the selected atom or ion, as taught by Shimazu, in order that computing and rendering results can be displayed for further analysis.

21. As to claims 3 and 4, Maksimov et al. do not disclose the display being at least one of static or dynamic.

22. Shimazu teaches the display being at least one of static or dynamic (see Fig. 15).

23. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Maksimov et al.'s system to include the display being at least one of static or dynamic, as taught by Shimazu, in order that computing result can be displayed in at least one of static or dynamic.

24. As to claims 5 and 6, Maksimov et al. do not disclose the displayed information being used to model reactivity and physical properties

25. Shimazu teaches displayed information being used to model reactivity and physical properties (see paragraphs 0010 and 0011 of DETAILED DESCRIPTION).

Art Unit: 2857

26. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Maksimov et al.'s system to include displayed information being used to model reactivity and physical properties, as taught by Shimazu, in order that displayed information can be used to model reactivity and physical properties.

27. As to claim 7, Maksimov et al. do not disclose the processing means being a general purpose computer.

28. Shimazu teaches the processing means being a general purpose computer (see paragraph 0012 of DETAILED DESCRIPTION).

29. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Maksimov et al.'s system to include the processing means being a general purpose computer, as taught by Shimazu, in order that all computing and rendering can be performed in the computer.

30. As to claims 8-15, Maksimov et al. do not disclose a central processing unit (CPU), one or more specialized processors, system memory, a mass storage device such as a magnetic disk, an optical disk, or other storage device, an input means such as a keyboard or mouse, a display device, and a printer or other output device.

31. Shimazu does not disclose expressly a central processing unit (CPU), one or more specialized processors, system memory, a mass storage device such as a magnetic disk, an optical disk, or other storage device, an input means such as a keyboard or mouse, a display device, and a printer or other output device.

32. It is, however, considered inherent that Shimazu's computer comprises a central processing unit (CPU), one or more specialized processors, system memory, a mass

Art Unit: 2857

storage device such as a magnetic disk, an optical disk, or other storage device, an input means such as a keyboard or mouse, a display device, and a printer or other output device (see paragraph 0012 of DETAILED DESCRIPTION), because such elements are known to be necessary elements in the computer for fetching, decoding, executing instructions, transferring information to and from other resources over the computer's main data-transfer path, the bus, and allowing information to be stored and retrieved.

33. Claims 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills, "The Grand Unified Theory of Classical Quantum Mechanics," Int. Jo Hydrogen Energy, Vol. 27, No. 5, (2002), pp. 565-590. (Internet Publication Date: Sept. 17, 2001) in view of Applicant Admitted Prior Art (hereafter referred as AAPR).

34. With respect to claims 53 and 54, Mills discloses a method comprising the steps of; a.) inputting electron functions that are derived from Maxwell's equations; b.) inputting a trial electron configuration; c.) inputting the corresponding centrifugal, Coulombic, diamagnetic and paramagnetic forces, d.) forming the force balance equation comprising the centrifugal force equal to the sum of the Coulombic, diamagnetic and paramagnetic forces; e.) solving the force balance equation for the electron radii; f.) calculating the energy of the electrons using the radii and the corresponding electric and magnetic energies; g.) repeating Steps a-f for all possible electron configurations, and h.) outputting the lowest energy configuration and the corresponding electron radii for that configuration (see Sections 1-13 and 19-21).

Art Unit: 2857

35. Mills does not disclose using a constraint that the bound electron(s) does not radiate under acceleration.

36. AAPR teaches using a constraint that the bound electron(s) does not radiate under acceleration (see page 3, lines 24-25 **The mathematical formulation for zero radiation based on Maxwell's equations**).

37. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Mills's method to include using a constraint that the bound electron(s) does not radiate under acceleration, as taught by AAPR, in order that zero radiation based on Maxwell's equations can be calculated for rendering the nature of atoms and atomic ions.

Allowable Subject Matter

38. Claims 18-51 and 55-70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

39. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

40. Chung et al. disclose methods, apparatus and computer program products for simulating plasma behavior in a plasma reactor apparatus, such as those widely used for manufacturing semiconductor devices.

Art Unit: 2857

41. Mills et al. disclose methods and apparatus for releasing energy from hydrogen atoms (molecules) by stimulating their electrons to relax to quantized lower energy levels and smaller radii (smaller semimajor and semiminor axes) than the "ground state" by providing energy sinks or means to remove energy resonant with the hydrogen energy released to stimulate these transitions.

42. Collins et al. disclose a plasma reactor chamber using an antenna driven by RF energy (LF, MF, or VHF) which is inductively coupled inside the reactor dome.

43. Druz et al. disclose a charged particle source including a vessel defining an interior for containing a plasma, the vessel having an inlet communicating with the interior of the vessel and connected to a source of atoms, and an aperture through which a charged particle beam is discharged, an energy generator for communicating with the atoms in the interior of the vessel and effecting ionization of the atoms in the vessel and creating the plasma, an electrode assembly disposed in the interior of the vessel, the electrode assembly including a conductive electrode support member, a tray member associated with the support member, a conductive liquid disposed in the tray member, the liquid having a surface area and a conductor connected between the conductive liquid and a voltage source, and an ion optics assembly disposed adjacent the vessel for accelerating plasma-generated charged particles having the same polarity as the conductive liquid in the vessel while maintaining charged particles of the opposite polarity within the vessel.

44. Barone et al. disclose a method for predicting a process surface profile that a given plasma process will create on a process substrate.

Art Unit: 2857

45. Pollon et al. disclose an electronic scan antenna for generating an electrically scanned RF beam in response to an incident RF beam having at least one operating frequency band associated therewith includes a ground plane for reflecting the incident RF beam and a phasing arrangement of plasma structures operatively coupled to the ground plane.

46. Ohta discloses a form simulation device comprising a bulk plasma analytical unit making an analysis of a bulk plasma region and calculating potential, density of particles and change of sheath length with time within plasma when RF bias is given there, a sheath plasma analytical unit deciding the type of incident particle on the basis of the obtained particle density, a surface reaction calculation unit deciding absorbed material on the surface of the material to be etched, which the incident particle collides with and deciding the type of reaction between the absorbed material and the incident particle decided by the sheath plasma analytical unit, and a form calculation unit calculating the form of the material to be etched depending on the type of reaction decided by said surface reaction calculation unit.

Contact Information

47. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAROL S. TSAI whose telephone number is (571)272-2224. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ramos-Feliciano S. Eliseo can be reached on (571) 272-7925. The fax

Art Unit: 2857

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

October 28, 2008

Art Unit 2857

/Carol S Tsai/

Primary Examiner, Art Unit 2857